Life Systems, Inc.

24755 HIGHPOINT ROAD · CLEVELAND, OHIO 44122 · PHONE. 216 464-3291

Return to Julie

April 23, 1982
RHR-4-12

Ms. Julie A. Klaas
Office of Waste Programs Enforcement
U.S. Environmental Protection Agency
Room No. S-364-N
401 M Street, SW
Washington, DC 20460

Subject: Expert Witnesses Nominees for Technical Directive 5, Contract No. 68-01-6312

References: 1. Engineering-Science Technical Directive No. 5
2. Work Plan TR-519-2-4A

Dear Ms. Klaas:

A Summary of Qualifications, Curriculum Vitae and two (2) papers prepared by each nominee are enclosed for the following six nominees:

Dr. Eula Bingham, Toxicologist
Dr. James Selkirk, Toxicologist
Dr. Kenny Crump, Toxicologist
Dr. Julian Andelman, Chemist
Dr. David Warshawsky, Chemist
Dr. Brenda J. Kimble, Chemist

Criteria for selection of nominees included: (1) Disciplines (three toxicologists and three chemists); (2) Laboratory research experience on polynuclear aromatic hydrocarbons (PAHs) and other coal tar or creosote constituents; (3) Senior level scientist; (4) Previous expert witness testimony experience; (5) Advisory positions; (6) Author of relevant publications. Finally, the nominees were not to be on the list of persons contacted by EPA that were listed in the Technical Directive (TD). The toxicologists were selected to compliment the oncology expertise of the individuals already listed by EPA.

We believe that these nominees represent some of the most revered experts in the area of PAHs. For instance, Dr. Eula Bingham of the University of Cincinnati certainly has excellent qualifications. Others contacted but unable to participate as a result of scheduling or a conflict of interest include: Dr. Ronald Hites from Indiana University, Dr. Rolf Hartung at the University of Michigan and Dr. Edward Bresnick at the University of Vermont.

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Mr. Bob Rosing will call Mr. Michael Kosakowski on Monday, April 26, 1982 to schedule the conference call interviews to facilitate your selection of an expert witness for this TD.

If you have any questions concerning the enclosures or the Consultants, call Mr. Robert J. Rosing or myself. We can be reached at (216) 464-3291.

Very truly yours,

LIFE SYSTEMS, INC.

R. H. Reuter, Ph.D.
Vice President

RHR/pm

Enclosures as stated

cc: Mr. Michael Kosakowski (w/o encls.)
Dr. Barbara Elkus (w/o encls.)
Task Manager (Project 1238)

SUMMARY OF QUALIFICATIONS

Dr. Eula Bingham, Ph.D.

Dr. Eula Bingham is Vice President and University Dean for Graduate Studies and Research at the University of Cincinnati in Cincinnati, Ohio. She is also Professor of Environmental Health at the University. Dr. Bingham received her Ph.D. in Zoology from the University of Cincinnati in 1958.

Dr. Bingham is most noted for her efforts as Assistant Secretary of Labor for the Occupational Safety and Health Administration, U.S. Department of Labor from March, 1977 through January, 1981. Dr. Bingham's current interests center on the carcinogenic potenial of complex mixtures. She has authored or co-authored over 50 publications on these as well as other topics.

Dr. Bingham has served on national committees for the Food and Drug Administration, National Institute for Occupational Safety and Health, National Research Council and many more. She has received the Julia Jones Award from the New York Lung Association, the Homer N. Calver Award from the American Public Health Association, the Rockefeller Foundation Public Service Award and the Phil Hart Award.

The attached Curriculum Vitae and selected publications further highlight Dr. Eula Bingham's professional career.

CURRICULUM VITAE

Eula Bingham (Mattheis)

Experience: Presently: Vice President and University Dean for Graduate Studies and Research
Professor, Environmental Health 1977 - present.
Assistant Secretary of Labor, Occupational Safety and Health Administration, U.S. Department of Labor March, 1977 - January, 1981.
Associate Director, Department of Environmental Health, University of Cincinnati Medical Center, Cincinnati, Ohio 45267 October, 1972 - March, 1977.
Associate Professor, Environmental Health 1970 - 1977.
Assistant Professor, Environmental Health 1961 - 1970.
Member of Graduate Faculty 1963 - present.
Research Associate, Chemical Carcinogenesis 1957 - 1961.
Research Assistant (Part-time), Study of environmental factors influencing cutaneous irritation and sensitization 1955 - 1957.
Research Associate (Part-time), Pathogenesis and epidemiology of deep mycoses 1953 - 1954.
Analytical Chemist, Hilton-Davis Chemical Company, Cincinnati, Ohio 1951 - 1952.

Education:

B.S. 1951 - Chemistry and Biology - Eastern Kentucky University, Richmond, KY.

M.S. 1954,
Ph.D. 1958 - Zoology - University of Cincinnati, Cincinnati, OH.
Area of Concentration - Physiology
Minors: Ecology and Biochemistry

Other graduate courses - Invertebrate Zoology - Marine Biological Laboratory Woods Hole, Massachusetts.

Honors:

May 19, 1980 - Julia Jones Award, N.Y. Lung Association, Am. Lung Ass'n., N.Y., N.Y.

October 21, 1980 - Homer N. Calver Award, American Public Health Association, Detroit, Michigan.

December 9, 1980 - Rockefeller Foundation Public Service Award, Washington, D.C.

March 25, 1981 - Phil Hart Award, Washington, D.C.

Advisory Committees - National:

Food and Drug Administration - Food and Drug Advisory Committee, 1976 - 1977.

Environmental Health Advisory Committee, Science Advisory Board of the Environmental Protection Agency, 1976 - 1978.

National Air Quality Criteria Advisory Committee, 1975 - 1976.

Ad Hoc Committee to Develop Criteria For FDA-GRAS -- Flavorings. Federation of American Societies for Experimental Biology, 1975.

National Academy of Sciences ad hoc Lead in Paint Committee, 1974 - 1975.

Standards Advisory Committee on Coke Oven Emissions, Chair, Department of Labor, November, 1974 - May, 1975.

Standards Advisory Committee on Carcinogens - United States Department of Labor, 1973.

Study Section, Safety and Occupational Health of the National Institute for Occupational Safety and Health, 1972 - 1976.

Consultant to the Panel on Vapor Phase Organic Air Pollutants (from Hydrocarbons), National Research Council, 1972 - 1975.

Consultant to Subcommittee on Carcinogenesis of Threshold Limits Committee, American Conference of Industrial Hygienists, 1972.

Committee on Priority Mechanisms for Research on Agents Potentially Hazardous to Human Health, Assembly of Life Sciences: National Research Council, 1981 -

Teaching Experience:

Undergraduate and Graduate Courses Taught:

Teaching Assistantships in Comparative Anatomy, Embryology and Physiology; Physiology for Engineers, Department of Environmental Health; Functional Histology and Histological Technique, Department of Biological Sciences; Physiology, Edgecliff College; Biological Effects of Air Pollutants, Department of Environmental Health; Chemical Carcinogenesis, Department of Environmental Health; Preventive Medicine (Second year medical students); Environmental Health and Public Policy, Department of Environmental Health.

Publications:

Emmett, E.A., Bingham, E., and Barkley, W.: "A Carcinogenic Bioassay of Certain Roofing Materials." American Journal of Industrial Medicine. In Press.

Murthy, R.C., Barkley, W., Hollingsworth, L., and Bingham, E.: "Enzymatic Changes in Alveolar Macrophages of Rats Exposed to Lead and Nickel by Inhalation." Journal of Environmental Pathology and Toxicology. In Press.

Warshawsky, D., Niemeier, R. and Bingham, E.: "The Influence of SO_2 on the Metabolism and Distribution of Benzo(a)pyrene in the Isolated Perfused Rabbit Lung." Journal of Toxicology and Environmental Health. In Press.

Bingham, E.: "Some Scientific and Social Issues of Identifying Reproductive Hazards in the Workplace." In Infante, P.F. and Legator, M.S., Eds: Proceedings of a Workshop on Methodology for Assessing Reproductive Hazards in the Workplace. OHHS (NIOSH) Publication No. 81-100 (1980) pp. 423.

Barkley, W., Stemmer, K.L., Agee, J., Suskind, R.R., and Bingham, E.: "The Carcinogenicity of Various Shale Oils and Shale Oil Products." In Gale, C., Ed.: Oil Shale Symposium: Sampling, Analysis and Quality Assurance. March 1979. U.S. Environmental Protection Agency Publication EPA-600/9-80-022, 1980, pp. 455-463.

Warshawsky, D., Bingham, E., and Niemeier, R.W.: "The Effects of n-Dodecane Pretreatment on the Metabolism and Distribution of Benzo (a)pyrene in the Isolated Perfused Rabbit Lung." Life Sciences 27:1827-1837 (November 17), 1980.

Warshawsky, D., Niemeier, R.W., and Bingham, E.: "Study of the Effect of Whole Animal Exposure to Acid Mists and Particulates on the Pulmonary Metabolism of Benzo(a)pyrene in the Isolated Perfused Lung Model." U.S. Environmental Protection Agency Publication EPA-600/1-80-029, 1980, pp. 159.

Bingham, E.: "Legislative Control of Toxic Hazards. I. The Approach in the U.S.A." Annals of Occupational Hygiene 23:79-83, 1980.

Reid, J.B., Bingham, E., and Chertow, B.: "Computer Modeling of Carcinogenesis Mechanisms Including Dose-Response Relationships." Abstracts of Papers, Society of Toxicology, Eighteenth Annual Meeting, New Orleans, Louisiana, March 11-15, 1979. Toxicology and Applied Pharmacology, 48:A300 (March 30, 1979).

Warshawsky, D., Niemeier, R., Warren, C. and Bingham, E.: "The Effects of SO_2 on Metabolism of Benzo(a)pyrene in the Isolated Perfused Lung." In Jones, P.W., and Leher, P., Eds.: Polynuclear Aromatic Hydrocarbons. Ann Arbor, Ann Arbor Science Publishers, 1979, pp. 473-488.

Barkley, W., Warshawsky, D., Suskind, R.R. and Bingham, E.: "The Toxicology and Carcinogenic Investigation of Shale Oil and Shale Oil Products." Proceedings of the Symposium on Potential Health and Environmental Health Effects of Synthetic Fossil Fuel Technologies, U.S. National Technical Information Service Report CONF-780903, 1979, pp. 157-162.

Bingham, E.: "Scientific Bases for Identification of Potential Carcinogens and Estimation of Risks." IRLG Principal, Report of the Interagency Regulatory Liason Group, Work Group on Risk Assessment. Journal National Cancer Institute 63(1):241-268 (1979).

Bingham, E. and Barkley, W. (June, 1979). Bioassay of Complex Mixtures Derived from Fossil Fuels. Environmental Health Perspectives. 30:157-163.

Bingham, E., Trosset, R.P., and Warshawsky, D.: "Carcinogenic Potential of Petroleum Hydrocarbons: A Critical Review of the Literature." Journal of Environmental Pathology and Toxicology 3:483-563 (December), 1979.

Bingham, E.: "What OSHA Expects of Physicians Serving in the Industrial Community." Journal of Occupational Medicine 20(12): 818-819, 1978.

Bingham, E., Warshawsky, D., and Niemeier, R.W.: "Metabolism of Benzo(a)pyrene in the Isolated Perfused Rabbit Lung Following n-Dodecane Inhalation." In Slaga, T.J., Sivak, A., and Boutwell, R.K., Eds.: Carcinogenesis, Vol. 2. Mechanisms of Tumor Promotion and Cocarcinogenesis. New York, Raven Press, 1978, pp. 509-516.

Reid, J.B., and Bingham, E.: "Lymphatic Absorption of Benzo(a) pyrene from the Intestinal Tract of the Unanesthetized Rat." Abstracts of Papers for the Seventeenth Annual Meeting of the Society of Toxicology, San Francisco, CA, March 12-16, 1978. Toxicology and Applied Pharmacology 45:262 (July), 1978.

Trosset, R.P., Warshawsky, D., Menefee, C.L., and Bingham, E.: "Investigation of Selected Potential Environmental Contaminants: Asphalt and Coal Tar Pitch. Final Report." U.S. Environmental Protection Agency Publication EPA-56012-77-055, 1978, 230 pp.

Warshawsky, D., Niemeier, R.W., and Bingham, E.: "Influence of Particulates on Metabolism of Benzo(a)pyrene in the Isolated Perfused Lung." In Jones, P.W., and Freudenthal, R.I., Eds.: Carcinogenesis --- A Comprehensive Survey. Vol. 2. Polynuclear Aromatic Hydrocarbons: Second International Symposium on Analysis, Chemistry, and Biology. New York, Raven Press, 1978, pp. 347-360.

Bingham, E.: "Research Methods Employed in the Evaluation of Volatile Agents on Biological Systems." In International Symposium on the Control of Air Pollution in the Working Environment. Stockholm, Sweden, September 6-8 (1977) Part I: pp. 32-41.

Bingham, E., Ed.: "Proceedings Conference on Women and the Workplace." June 17-19, 1976, Washington, D.C., Society for Occupational and Environmental Health, 1977, 364 pp.

Radike, M.J., Stemmer, K.L., Brown, P.G., Larson, E. and Bingham, E.: "Effect of Ethanol and and Vinyl Chloride on the Induction of Liver Tumors. Preliminary Report." Environmental Health Perspectives 21:153-155. (December, 1977).

Horton, A.W. and Bingham, E.: "Risk of Bladder Tumors Among Benzidine Workers and Their Serum Properdin Levels." Journal of the National Cancer Institute 58:1225-1228. (May, 1977).

Bingham, E. and Nord, P.J.: "Cocarcinogenic Effects of n-Alkanes and Ultraviolet Light on Mice." Journal of the National Cancer Institute 58:1099-1101. (April 1977).

Dalbey, W., and Bingham, E.: "Metabolsim of Trichloroethylene by the Isolated Perfused Lung." Toxicology and Applied Pharmacology 43:267-277. (February, 1977).

Bingham, E., Barkley, W., Murthy, R., and Vasallo, C.: "Investigation of Alveolar Macrophages from Rats Exposed to Coal Dust." In Walton, W.H., Ed.: Inhaled Particles IV. Oxford, Pergamon Press, 1977, pp. 543-550.

Bell, R.R., Stemmer, K.L. Michael, L.W., Trey, J.E., and Bingham, E.: "The Metal Binding Capacity of Thermal Degradation Products of Plastics." American Chemical Society Bicentennial Meeting, New York, April 5-9, 1976.

Dalbey, Walden, and Bingham, Eula: "Distribution of Metabolites of Benzo(a)pyrene in the Isolated Perfused Rabbit Lung Preparation." Abstracts of Papers for the Fifteenth Annual Meeting of the Society of Toxicology, Atlanta, Georgia, March 14-18, 1976. Toxicology and Applied Pharmacology 37:189-190. (July, 1976).

Bingham, E., Niemeier, R. and Reid, J.: "Multiple Factors in Carcinogenesis." Occupational Carcinogenesis, The New York Academy of Sciences, 271, pp. 14-22, 1976.

Bingham, E., Dalbey, W., and Niemeier, R.: "Metabolism of Environmental Pollutants by the Isolated Perfused Lung." Federation Proceedings, 35:81-84. (January, 1976).

Stemmer, K., Bingham, E., and Barkley, W.: "Pulmonary Response to Polyurethane Dust." Environmental Health Perspecives 11:109-113. (June, 1975).

Bingham, E.: Metals Seminar Keynote Address. In Xintaras, C., Johnson, B.L., and de Groot, I., Eds.: Behavioral Toxicology; Early Detection of Occupational Hazards. HEW Publication No. (NIOSH) 74-126, 1974, p. 199-206.

Zavon, M.R., Hoegg, U., and Bingham,E.: "Benzidine Exposure as a Cause of Bladder Tumors." Archives of Environmental Health 27:1-7, 1973.

Nord, P.M., Bingham, E.: "Biological Availability of Certain Metals in Coal." In Hemphill, D.D., Ed.: Trace Substances in Environmental Health-VI. Proceedings of the University of Missouri's 6th Annual Conference on Trace Substances in Environmental Health, Columbia, Missouri, June 13-15, 1972, pp. 341-345 (Pub. 1973).

Falk, H.L., and Bingham, E.: "Interaction of Fluorescent Whitening Agents and Ultraviolet Radiation." Ambio 2, No. 1-2:22-25, 1973.

Horstman, S., Barkley, W., Larson, E., and Bingham, E.: "Aerosols of Lead, Nickel, and Cadmium; A Method of Generating Soluble and Insoluble Compounds." Archives of Environmental Health 26:75-77, 1973.

Bingham, E., Barkley, W., Zerwas, M., Stemmer, K., and Taylor, P.: Responses of Alveolar Macrophanges to Metals. I. Inhalation of Lead and Nickel." Archives of Environmental Health 25:406-414, 1972.

Niemeier, R.W., and Bingham, E.: "An Isolated Perfused Lung Preparation for Metabolic Studies." Life Sciences, Part II. Biochemistry, General and Molecular Biology 11:807-820, 1972.

Bingham, E.: "Thresholds in Cancer Induction; If They Exist, Do They Shift." Archives of Environmental Health 22:692-695, 1971.

Bingham, E., and Falk, H.L.: "Combined Action of Optical Brighteners and Ultraviolet Light in the Production of Tumors." Food and Cosmetics Toxicology 9:173-176, 1970.

Bingham, E.: "Trace Amounts of Lead in the Lung." In Hemphill D.D., Ed.: Trace Substances in Environmental Health -III. Proceeding of the University of Missouri's 3rd Annual Conference on Trace Substances in Environmental Health, Columbia, Missouri, June 24-26, 1969, pp. 83-90.

Bingham, E., and Falk, H.L.: "Environmental Carcinogens. The Modifying Effect of Cocarcinogens on the Threshold Response." Archives of Environmental Health 19:779-783, 1969.

Bingham, E., Pfitzer, E.A., Barkley, W., and Radford, E.P.: "Alveolar Macrophages: Reduced Number in Rats After Prolonged Inhalation of Lead Sesquioxide." Science 162:1297-1298, 1968.

Bingham, E., Stemmer, K.L., and Falk, H.L.: "The Effects of Repeated Injections of Certain Adjuvants on Chemical Carcinogenesis." Annals of Allergy 25:684-690, 1967.

Horton, A.W., Van Dreal, P.A., and Bingham, E.L.: "Physiochemical Mechanisms of Acceleration of Skin Carcinogenesis." In Montagna, W., Ed.: Advances in Biology of Skin. Volume VII. Carcinogenesis. Oxford and New York, Pergamon Press, 1966, Chater X, pp. 165-181.

Bingham, E., and Horton, A.W.: "Environmental Carcinogenesis: Experimental Observations Related to Occupational Cancer." In Montagna, W., Ed.: Advances in Biology of Skin. Volume VII. Carcinogenesis. Oxford and New York, Pergamon Press, 1966, Chapter XI, p. 183-193.

Tye, R., Burton, M.J., Bingham, E., Bell, Z., and Horton,A.W.: "Carcinogens in a Cracked Petroleum Residuum. The Contributions of Various Polycyclic Aromatic Hydrocarbons to the Carcinogenic Potency of a Catalytically Cracked Oil." Archives of Envirnomental Health 13:202-207, 1966.

Powell, C.H., Tye, R., and Bingham, E.: "The Estimation of a Euglobulin by Ion-Exchange Chromatography." Archives of Environmental Health 13:199-201, 1966.

Horton, A.W., Bingham, E.L., Burton, M.J.G., and Tye, R.: "Carcinogenesis of the Skin. III. The Contribution of Elemental Sulfur and of Organic Sulfur Compounds." Cancer Research 25:1759-1763, 1965.

Bingham, E., Horton, A.W., and Tye, R.: "The Carcinogenic Potency of Certain Oils." Archives of Environmental Health 10:449-451, 1965.

Horton, A.W., Burton, M.J., Tye, R., and Bingham, E.L.: "Composition Versus Carcinogenicity of Distillate Oils." In Symposium on Advances in the Composition and Analysis of Petroleum. Presented before the Division of Petroleum Chemistry, American Chemical Society, New York City Meeting, September 8-13, 1963. American Chemical Society Division of Petroleum Chemistry Preprints 8, No. 4:C-59-65, 1963.

Springman, F., Bingham, E., and Stemmer, K.L.: "The Acute Effects of Lead Alkyls. Oral Administration of Tetramethyllead, Tetraethyllead, Trimethyllead Chloride, Triethyllead Chloride and Diethyllead Dichloride to Rats." Archives of Environmental Health 6:469-472, 1963.

Drouhet, E. Schwartz, J. and Bingham, E.: "Evaluation of the Action of Mystatin on Histoplasma Capulatum in Vitro and in Hamsters and Mice." Antibiotics and Chemotheraphy 6:23-35, 1956.

Schwartz, J., Bingham, E.: "The Pthogenesis of Canine Histoplasmosis.: Journal of the American Veterinary Medical Association 128:611-613, 1956.

Schwartz, J., Bingham, E., and Roubenoff, D.: "The Communicability of Experimentally Induced Histoplasmosis." American Journal of Clinical Pathology 25:932-934, 1955.

Schwartz, J., Bingham, E., Robbins, E., and Adriano S.: "Experimental Histoplasmosis in Mice and Pregancy." Journal of Infectious Diseases 97:160-161, 1955.

SUMMARY OF QUALIFICATIONS

Brenda J. Kimble, Ph.D.

Dr. Brenda J. Kimble is a Partner and Consulting Chemist for Amphion Associates in Lafayette, California. She received her Ph.D. in Chemistry from the University of Bristol, Bristol England in 1972.

Dr. Kimble's interests include the analysis and quantification of organic materials in a wide variety of environmental and petroleum related studies. Particular emphasis is placed on structural identification of molecular species and the interpretation of experimental data in the context of the problem at hand. Dr. Kimble is becoming increasingly involved in providing consulting services to the legal profession; including critical reviews of technical reports, interrogatory preparation, expert witness testimony and assistance with the preparation for cross-examination of adverse technical witnesses.

Dr. Kimble is a member of the American Chemical Society, the American Association for the Advancement of Science and the Society for Environmental Toxicology and Chemistry.

A Curriculum Vitae and two selected publications are enclosed which further highlight Dr. Brenda J. Kimble's professional career.

CURRICULUM VITAE

Brenda J. Kimble

Amphion Associates
PO Box 1608
Lafayette, CA 94549
(415) 372-8260

EDUCATION

B.Sc. (Honours), Chemistry, 1968, The University of Bristol, Bristol, England
- Special Subject: Organic Chemistry
- Subsidiary Subjects: Mathematics, Biochemistry
- Research Project: Kinetics of the Oxidation Reactions of the Mn(III)-EDTA Complex

Ph.D., Chemistry, 1972, The University of Bristol, Bristol, England
- Research Field: Analytical Organic Geochemistry (capillary gas chromatography and mass spectrometry)
- Thesis Title: The Geochemistry of Triterpenoid Hydrocarbons
- Supervisor: Prof. G. Eglinton, F.R.S.

PRESENT POSITION

Partner and Consulting Chemist — 1978-present

Amphion Associates, PO Box 1608, Lafayette, CA 94549
(Consultants in Analytical, Environmental and Petroleum Chemistry)

Clients include:
- non-profit research organizations
- state and federal agencies
- private corporations
- trade unions
- public interest attorneys

Types of projects include:
- critical evaluation of papers, reports, proposals, legal submissions and testimonies
- expert witness testimonies
- scientific advisor to the law profession
- development of detailed protocols for sampling and analysis of complex environmental mixtures
- training and assistance with field sampling for trace organic analysis
- close supervision of subcontracted experimental research in analytical chemistry and toxicology
- evaluation and recommendation of analytical instrumentation for monitoring complex environmental situations
- interpretation of chromatographic and mass spectral data

RESEARCH EXPERIENCE

Analytical Organic Chemist — 1978-1981

Laboratory for Energy-Related Health Research,
University of California, Davis, CA 95616

Established new analytical organic chemistry facility to augment ongoing research (funded primarily by U.S. Department of Energy) concerned with the evaluation of the potential environmental and human health effects resulting from new energy technologies. Specific projects included:

Development of analytical instrumentation (chromatography, mass spectrometry, and computerized data handling) for the identification and quantitation of trace components of complex organic mixtures.

Development of chromatographic and mass spectrometric methods for the identification of biologically-active (mutagenic) components in complex organic mixtures.

The identification and quantitation of organic components associated with stack-collected fly ash from conventional coal combustion.

The quantitation of tetrachlorodibenzo-p-dioxins extracted from fly ash from the combustion of fossil and refuse-derived fuels.

Chemical and toxicological analyses of hazardous materials in the emissions from the stack of an oil-fired power plant.

Analytical Organic Chemist — 1973-1977

Space Sciences Laboratory, University of California, Berkeley, CA 94720

Initiated development, evaluation, and use of combined gas chromatography/high resolution mass spectrometry incorporating glass capillary columns and continuous fast-scanning capability. Designed and evaluated appropriate computer techniques for continuous real-time data acquisition and on-line data analysis and interpretation of high resolution mass spectra of gas chromatographic effluents. Applied glass capillary gas chromatography/mass spectrometry/computer instrumentation at both high and low mass resolution to the study of the molecular nature of complex organic mixtures for a variety of biomedical, environmental and organo-geochemical problems. Major projects:

The identification of organic acids isolated from human urine as indicators of inborn genetic defects.

The analysis of hydrocarbon fractions of possible petroleum origin isolated from sediments, organisms and the water column from the outer continental shelf of the Southern California Bight.

The analysis of phenolic, acidic and neutral fractions of a petroleum refinery wastewater effluent at various stages of treatment prior to discharge into the environment.

The analysis of Southern California municipal wastewaters for the evaluation of experimental tertiary treatments of secondary effluents.

Scientific Officer 1971-1972

Department of Chemistry,
University College of South Wales and Monmouthshire,
Cardiff, Wales

Established the department's new organic mass spectrometry laboratory; responsible for the initial testing, operation and supervision of maintenance of the gas chromatography/mass spectrometry/computer instrumentation.

Research Technician 1963-1964

Department of Biophysics, King's College, University of London, England

Assisted in the development of X-ray diffraction techniques for the study of living contracted muscles.

MANAGERIAL AND RELATED EXPERIENCE

Planning, management and budgeting of research projects for Federal and State granting agencies, including preparation of proposals and progress/final reports.

Organization and direction of contract and service work.

Liaison and training of collaborating and visiting scientists and non-scientific agency personnel concerning a wide variety of disciplines relating to analytical chemistry and toxicology.

Extensive experience in writing, editing, and overall production of scientific material for publication, including (1969-1975) free-lance scientific editing for Springer-Verlag, Heidelberg, West Germany.

PROFESSIONAL SOCIETIES

American Chemical Society
American Association for the Advancement of Science
American Society for Mass Spectrometry
Society of Environmental Toxicology and Chemistry
Genetic and Environmental Toxicology Association of Northern California
Association of Consulting Chemists and Chemical Engineers

AWARDS AND PROFESSIONAL ACTIVITIES

1974 Award by the Organic Geochemistry Division of the Geochemical Society for the most outstanding paper in organic geochemistry published that year: "Tri- and tetraterpenoid hydrocarbons in the Messel oil shale", B. J. Kimble et al., Geochim. Cosmochim. Acta 38, 1165 (1974); thesis research.

Founder and chairperson of BAY AREA MASS SPECTROMETRY — a monthly forum for mass spectrometrists in the greater San Francisco Bay Area with visiting and local speakers; established in 1980 and currently mailing to 350 members.

Member of U.S. Environmental Protection Agency's panel to review dioxin studies in human milk and other environmental samples; Washington, DC, December 1979 and April 1980.

Advisor to the California State Energy Commission on environmental monitoring of site proposed for coal-fired powerplant (1980).

Advisor to the California State Air Resources Board on sampling and analysis of toxic emissions from combustion processes (1981).

Member of the Chemical Carcinogen Safety Committee for the University of California, Davis campus (1980-1981).

REFERENCES

References from the scientific and legal professions can be provided upon request.

LIST OF PUBLICATIONS

B. J. Kimble

Smith, D. H., N. A. B. Gray, C. T. Pillinger, B. J. Kimble, and G. Eglinton. Complex mixture analysis — geochemical and environmental applications of a compound classifier based on computer analysis of low resolution mass spectra, p. 249-261. In H. R. von Gaertner and H. Wehner, (Eds.), Advances in Organic Geochemistry, Pergamon Press, Oxford-Braunschweig (1971).

Ensminger, A., P. Albrecht, G. Ourisson, B. J. Kimble, J. R. Maxwell, and G. Eglinton. Homohopane in Messel oil shale: First identification of a C_{31} pentacyclic triterpane in nature. Bacterial origin of some triterpanes in ancient sediments? Tetrahedron Letters 3861-3864 (1972).

Kimble, B. J., J. R. Maxwell, R. P. Philp, and G. Eglinton. The identification of steranes and triterpanes in geolipid extracts by high resolution gas chromatography and mass spectrometry. Chemical Geology 14: 173-198 (1974).

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van Dorssaelaer, A., A. Ensminger, C. Spyckerelle, M. Dastillung, O. Sieskind, P. Arpino, P. Albrecht, G. Ourisson, P. W. Brooks, S. J. Gaskell, B. J. Kimble, R. P. Philp, J. R. Maxwell, and G. Eglinton. Degraded and extended hopane derivatives (C_{27} to C_{35}) as ubiquitous geochemical markers. Tetrahedron Letters 1349-1352 (1974).

Kimble, B. J., R. E. Cox, R. V. McPherron, R. W. Olsen, E. Roitman, F. C. Walls, and A. L. Burlingame. Real-time gas chromatography/high resolution mass spectrometry and its application to the analysis of physiological fluids. Journal of Chromatographic Science 12: 647-655 (1974).

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Kimble, B. J., F. C. Walls, R. W. Olsen, and A. L. Burlingame. Real-time gas chromatography-high resolution mass spectrometry and the analysis of complex mixtures, p. 503-505. In Proceedings of 23rd Annual Conference on Mass Spectrometry and Allied Topics, Houston, Texas, May 25-30, Paper #T-9, 1975.

Burlingame, A. L., B. J. Kimble, and Peter J. Derrick. Mass spectrometry. Analytical Chemistry Annual Reviews 48: 368R-403R (1976).

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Burlingame, A. L., B. J. Kimble, E. S. Scott, F. C. Walls, J. W. de Leeuw, B. W. de Lappe, and R. W. Risebrough. The molecular nature and extreme complexity of trace organic constituents in Southern California municipal wastewater effluents. In L. H. Keith, (Ed.), Identification and Analysis of Organic Pollutants in Water, Ann Arbor Science Publishers, Inc., Ann Arbor, Michigan, Chapter 31, p. 557-585, 1976.

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Kimble, B. J. An introduction to gas chromatography/high resolution mass spectrometry, p. 120-149. In M. L. Gross, (Ed.), Chemical Applications of High Performance Mass Spectrometry, American Chemical Society Symposium Series 70, 1978; invited monograph.

Kimble, B. J. and M. L. Gross. Tetrachlorodibenzo-p-dioxin quantitation in stack-collected coal fly ash. Science 207: 59-61 (1980).

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Kimble, B. J. Comments on "Chlorinated dibenzo-p-dioxins and related compounds in incinerator effluents." Chemosphere 10: 243-244, 1981.

IN PREPARATION

Kimble, B. J., R. L. Lapp, T. M. Sack, and M. L. Gross. The statistical evaluation of high resolution mass spectrometric data for trace and complex mixture analysis.

Kimble, B. J. and M. L. Gross. Evaluation of methods for the extraction of tetrachlorodibenzo-p-dioxins from fly ash from the combustion of fossil and refuse-derived fuels.

Kimble, B. J. and M. L. Gross. Quantitation of tetrachlorodibenzo-p-dioxins extracted from fly ash from the combustion of fossil and refuse-derived fuels.

Kimble, B. J., B. L. Jelus-Tyror, and J. Tyror. Characterization of the organic components of fly ash from the combustion of refuse-derived fuel by capillary gas chromatography/high resolution mass spectrometry.

SUMMARY OF QUALIFICATIONS

James K. Selkirk, Ph.D.

Dr. James K. Selkirk is Unit Leader of the Chemical Carcinogenesis and Carcinogen Metabolism, Cancer and Toxicology Program at the Oak Ridge National Laboratory in Oak Ridge, TN. He is also a Senior Lecturer at the University of Tennessee, Oak Ridge Graduate School of Biomedical Sciences. Dr. Selkirk received his Ph.D. in Biochemistry from the Upstate Medical Center of Syracuse in Syracuse, NY in 1969.

Dr. Selkirk's research interests deal with the mechanistic and biological effects of chemicals in the environment. Much of this research has been performed on polynuclear aromatic hydrocarbons (PAHs). Dr. Selkirk has authored or co-authored over 100 publications and abstracts on PAHs and numerous other topics. He has experience as an Expert Witness and recently testified for EPA on a case dealing with PAHs.

Dr. Selkirk is a member of the National Cancer Institute/National Institutes of Health, Breast Cancer Task Force Working Group. He has also participated on committees for the University of Tennessee, Oak Ridge National Laboratory and the National Academy of Sciences. He is a member of the New York Academy of Sciences, the American Association for Cancer Research and the Federation of American Societies for Experimental Biology. He has received the International Cancer Research Technology Transfer Award from the International Agency for Research on Cancer.

A Curriculum Vitae and selected publications are attached which further highlight the professional career of Dr. James K. Selkirk.

Curriculum Vitae

James K. Selkirk, Ph.D.

Personal Information

Date of Birth: December 3, 1938 Place of Birth: New York City

Marital Status: Married Children: Two

Draft Status: Honorable Discharge
U.S. Army, 1961

Education

Bronx High School of Science, New York City, June, 1956

Syracuse University, Syracuse, New York, B. S., June, 1964
State University of New York, College of Environmental Science and Forestry, B. S., 1964

Upstate Medical Center of Syracuse, Syracuse, New York, June, 1969
(Ph.D. - Biochemistry) Dissertation: *Isolation of Plasma Membrane from Cells of Solid Tumor with Analysis of Phospholipids, Fatty Acids, Calcium and Magnesium.*

Experience

Postdoctoral Research Fellow (Dr. Charles Heidelberger)
McArdle Laboratory for Cancer Research, University of Wisconsin, Madison, Wisconsin, September 1969 - 1972.

Visiting Scientist - Chester Beatty Research Institute (Dr. Peter Sims)
Royal Cancer Hospital, Fulham Road, London, England, March-May, 1971.

Staff Fellow - Molecular Carcinogenesis Section, Chemistry (Dr. Harry V. Gelboin)
National Cancer Institute, National Institutes of Health
Bethesda, Maryland, 1972 - 1974.

Senior Staff Fellow - Molecular Carcinogenesis Section, Chemistry,
National Cancer Institute, National Institutes of Health,
Bethesda, Maryland, 1974 - 1975.

Senior Research Staff - Cancer and Toxicology Program, Biology Division,
Oak Ridge National Laboratory, Oak Ridge, Tennessee, 1975.

Unit Leader - Chemical Carcinogenesis and Carcinogen Metabolism, Cancer and Toxicology Program, Biology Division, Oak Ridge National Laboratory,
Oak Ridge, Tennessee, 1976 - present.

Senior Lecturer (Part-time) - University of Tennessee-Oak Ridge Graduate School of Biomedical Sciences, Biology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, 1975 - present.

Committees and Associations — Dr. James K. Selkirk

National Cancer Institute/National Institutes of Health - ad hoc Grant and Contract Reviewer - Program Project, Core and Center Grant - 1972-present

Member National Cancer Institute/National Institutes of Health Breast Cancer Task Force Working Group - 1980-1982

University of Tennessee-Oak Ridge Graduate School of Biomedical Sciences
Member - Admissions Committee - 1976-present
Predoctoral Carcinogenesis Training Committee
Carcinogenesis Postdoctoral Selection Committee

Teaching Duties - BMS 6280 - Chemical and Physical Carcinogenesis (advanced graduate course)

Oak Ridge National Laboratory Proposal Review Committee - 1977-1979

National Academy of Sciences - Committee on Pyrene and Selected Analogs

Member - Sigma XI
American Association for Cancer Research
New York Academy of Sciences
Federation of American Societies for Experimental Biology, ASBC

Listed in "Who's Who in America"
"Who's Who in Technology"

Member Editorial Board of *Carcinogenesis* and *Cancer Research*.

Awards

International Cancer Research Technology Transfer Award -
International Agency for Research on Cancer - Lyon, France - Summer 1978

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Dr. James K. Selkirk

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9. Selkirk, J. K., Croy, R. G., Gelboin, H. V.: High-Pressure Liquid Chromatographic Analysis of Benzo(a)pyrene Metabolism and Covalent Binding and the Mechanism of Action of 7,8-Benzoflavone and 1,2-Epoxy-3,3,3,trichloropropane. Cancer Res. 34: 3474-3480, 1974.

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Abstracts

Dr. James K. Selkirk

1. Analysis of phospholipid fatty acids from tumor-cell membranes in Morris hepatomas. J. K. Selkirk and C.J. Elwood. Symposium on Transplantable hepatomas. Philadelphia, PA, June 15, 1969.

2. Isolation and partial characterization of a mouse-skin protein-bound derivative of dibenz(a,h)anthracene. J. K. Selkirk and C. Heidelberger. American Association for Cancer Research. Boston, MA, May 5, 1972.

3. Rapid and efficient separation of benzo(a)pyrene metabolites by high-pressure liquid chromatography. J. K. Selkirk, R. G. Croy, and H. V. Gelboin. American Association for Cancer Research. Houston, TX, March 28, 1974.

4. Analysis of benzo(a)pyrene metabolites in rodent liver microsomes by high-pressure liquid chromatography. J. K. Selkirk, R. G. Croy and H. V. Gelboin. XI International Cancer Congress, Florence, Italy, October 23, 1974.

5. Analysis of benzo(a)pyrene metabolism in human liver and lymphocytes and kinetic analysis of benzo(a)pyrene in rat liver microsomes. J. K. Selkirk, S. K. Yang and H. V. Gelboin. First International Symposium on Polynuclear Aromatic Hydrocarbons. Columbus, OH, October 15, 1975.

6. Isolation of four benzo(a)pyrene phenol metabolites. J. K. Selkirk, R. G. Croy and H. V. Gelboin. American Association for Cancer Research. Toronto, Canada, May 6, 1976.

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